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<p>(21) International Application Number: PCT/AU87/00295</p> <p>(22) International Filing Date: 28 August 1987 (28.08.87)</p> <p>(31) Priority Application Number: PH 7720</p> <p>(32) Priority Date: 28 August 1986 (28.08.86)</p> <p>(33) Priority Country: AU</p> <p>(71)(72) Applicant and Inventor: NEWMAN, Geoffrey, C. [AU/AU]; 46 Don Road, Lakes Entrance, VIC 3909 (AU).</p> <p>(74) Agent: CALLINAN, Keith, William; Callinan and Associates, 48 Bridge Road, Richmond, VIC 3121 (AU).</p> <p>(81) Designated States: AT (European patent), AU, BB, BE (European patent), BG, BJ (OAPI patent), BR, CF (OAPI patent), CG (OAPI patent), CH (European patent), CM (OAPI patent), DE (European patent), DK, FI, FR (European patent), GA (OAPI patent), GB (European patent),</p>		<p>HU, IT (European patent), JP, KP, KR, LK, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL (European patent), NO, RO, SD, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US.</p> <p>Published <i>With international search report.</i></p>	
<p>(54) Title: A MARINE AID FOR MARINE CRAFT</p>			
<p>(57) Abstract</p> <p>A marine aid for marine craft with the marine aid being an elongate piece of flexible material (118) adapted to be placed in the water and being secured (162) to the marine craft at its rear end and being weighted at its free end (126, 127). The free end is able to be pulled under the remainder of the flexible material to form a sea anchor.</p>			

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"A MARINE AID FOR MARINE CRAFT"

The present invention relates to a marine aid and relates particularly, although not exclusively, to a marine aid which can be used as a sea anchor or sail, 5 especially under emergency situations.

Under marine emergencies it is necessary to abandon ship and board inflatable life rafts. Common life rafts have a capacity for 4 to 25 occupants with survival supplies for several days. These life rafts 10 are usually inflated by canisters of compressed gas whereupon the occupants clamber aboard. As such emergencies normally occur during inclement weather substantial difficulties arise for rescues. With aerial surveillance it is very easy to overlook a 15 bobbing life raft especially in heavy seas. As the life rafts are merely specks in the sea to an airborne craft the importance of improving the visual nature of the life raft is paramount. Further problems arise for the occupants of the raft because of drifting from the 20 original scene of the marine disaster. Anchors or conventional sea anchors can provide problems because of the violent circular motion of the raft about the anchor point and the tipping resulting from riding over the wave crests or tripping by the normal anchor or the 25 sea anchor. Under such circumstances it may be necessary to cut the anchor loose rather than risk injury to the occupants or damage to the raft.

It is an object of the present invention to provide a marine aid which can be used as a sea anchor 30 but does not have the problems associated with a conventional sand-engaging or sea anchor.

A further object of the invention is to provide a marine aid which substantially increases the visual impact of a marine craft.

35 Another object of the invention is to improve

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the stability of an anchored marine craft.

A further preferred object of the invention, when used as a sea anchor, is that the amount of anchoring effect can be varied or controlled as required.

With these objects in view the present invention may provide a marine aid for marine craft including an elongated length of flexible material, one end of said material adapted to be coupled to said marine craft and the other end adapted to receive weight means.

Preferably one side of said material is light and/or radar reflective.

In one preferred embodiment said other end is adapted to slidably receive said weight means in the form of a tubular member across a substantial portion of the width of said material. When said marine aid is used as a sea anchor said other end includes guy ropes to control the position of said other end in the water.

In order that the invention may be clearly understood and readily put into practical effect, preferred non-limitative embodiments of a marine aid constructed in accordance with the invention will now be described with reference to the accompanying drawings, in which:-

Fig. 1 is a side view of a first embodiment of a marine aid made in accordance with the present invention secured to a life raft and being used as a sea anchor;

Fig. 2 is an underneath view of Fig. 1 in the normal position;

Fig. 3 is the same view as that of Fig. 2 with the direction of the end of the marine aid having been changed;

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Fig. 4 is a similar view to that of Fig. 1 with the marine aid being used as a sail;

Fig. 5 is a second embodiment of a marine aid made in accordance with the present invention showing 5 its use as a sea anchor;

Fig. 6 is a similar view to that of Fig. 5 with the marine aid at right angles to the position shown in Fig. 5;

Fig. 7 is the same view as that of Fig. 5 10 showing use of the marine aid to directionally control drift;

Fig. 8 shows use of the marine aid in Fig. 5 as a free running sail;

Fig. 9 shows an alternate method of rigging 15 the marine aid shown in Fig. 5 as a sail;

Fig. 10 shows the marine aid of Fig. 5 being used for emergency steering; and

Fig. 11 shows a variation in the manner of operation of the marine aid.

Turning to Figs. 1 to 4 there is shown a life 20 raft 10 having inflatable sides 12 and a canopy 14. An entrance 16 is provided in canopy 14 for entry of occupants therein. The life raft is of conventional construction and does not form part of the invention.

Secured to life raft 10 is a longitudinal 25 sheet 18 of material which is preferably sewn to the floor 20 of the life raft. The form of securement is non-critical as it could easily be adhesively secured, secured to hand ropes 22 or mounted in any convenient manner. The sheet is preferably formed of a flexible 30 plastics material and coated with a light and/or radar reflective material on upper surface 24. The sheet preferably has a length which is a multiple of the width, the multiplier of 3 being the optimum. At free 35 end 26 the sheet includes a pocket 28 into which may be

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slipped a weight (not shown) which may be a tube filled with weights e.g. lead shot, a galvanized chain, or the like. The weight may be slipped into pocket 28 when required. To complete the sheet guy ropes 30 are 5 secured to the corners 32, 34 to control the positioning of the free end 26. If required sheet 18 may have tapered ends 36, 38 as shown in Fig. 2.

In use sheet 18 is folded up and when the life raft 10 is released sheet 18 will unfold and drift 10 away to its extended position as shown in Fig. 1. The guy ropes will restrict the longitudinal length of the sheet and the free end 26 will curve inwardly to billow out in the manner shown in Fig. 1. Preferably, the curved portion is approximately one third of the total 15 length of the sheet. However, this may be varied to control the sea anchor effect to thus control the rate of drift. The raft is thus stabilized and limits the raft from being blown away from the disaster area. The large surface area of the sheet provides five times the 20 normal area visible to aircraft and the use of a radar and light reflective surface greatly increases the chances of success in locating the raft. The use of light reflective material allows aircraft to scan the sea using landing and/or search lights.

25 The sea anchor capability of the invention is vastly improved over the conventional sand or sea anchor. The invention avoids overturning of the raft in large sea swells caused by circular movement of the raft in the trough and the tightening of the anchor 30 rope when the raft is on the crest of the wave and the anchorage point is on the downwind side. The sheet also provides a landing platform on which a survivor may lay to avoid shark attack. The survivor may pull himself along the sheet in order to board the raft. It 35 also tends to stabilize the craft to provide relative

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uniformity of motion and prevents unwanted sudden variations in movement.

The invention may also be used to control drift of the raft by varying the length of guy ropes

5 30. By shortening one guy rope the free end 26 will no longer be at right angles to the longitudinal sides of the sheet as seen in Fig. 3. By controlling the angle a drift vector results whereby the direction of movement of the raft can be controlled e.g. to head 10 towards land. Directional shift is possible 60° either side of the wind direction drift by shortening the appropriate guy rope. If the tide is running into the wind, it is possible to travel 360° from the present position, if the tide is faster than the minimum wind 15 drift. Tests show that at about 45° to the normal line of drift the travel in this direction through the water is about two thirds of the unrestricted drift speed of the raft.

Under calmer conditions the sheet can be used 20 as a sail as shown in Fig. 4. Used in this manner it is possible to travel up to 20° either side of the down wind direction by controlling the guy ropes.

Turning to Figs. 5 to 10 there is disclosed a second embodiment of the invention for use with a 25 conventional marine craft 40. The sheet is constructed in a similar manner to that discussed in relation to Figs. 1 to 4 except that the sheet 18 is fastened to the craft differently. It is preferred that the sheet is attached to craft 40 by cords 42, 44.

30 Fig. 5 illustrates use of the invention as a sea anchor to arrest drift and to keep head to sea without restricting the bow of the craft from lifting. The bow is free to move between cords 42, 44.

35 Fig. 6 shows the invention mounted on the side of the craft to restrict drift and to increase

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stability.

Fig. 7 is similar to Fig. 3 where one guy line 30 is shortened to allow for port or starboard drift.

5 Fig. 8 shows use of the invention as a free running sail. In this set up an oar 46 forms a jury mast with oar 48 being used as a rudder. Cords 42, 44 are fastened to the bow of the craft whilst guy ropes 30 are fastened to oar 46 and then to the stern.

10 Fig. 9 shows a further variation of sail where a jury mast is not available. In this embodiment the sheet can be supplied with rods 50, 52 which slip into pockets at the end of the sheet.

15 Fig. 10 illustrates a craft which has lost steering control. By shortening the starboard guy line the craft will turn to port and vice versa when under power at low speeds.

Fig. 11 shows a variation wherein the sheet 118 is, again, rectangular, with the length being approximately three times the width. The sheet 118 is made of a material, or is coated with a material, which is light and, preferably, radar reflective. At the free end 126 there is a weight in the form of a galvanized chain 127. If not galvanized, the chain 127 should be otherwise treated to resist corrosion. This chain 127 may be secured directly to the sheet 118, or may be located in a pocket (not shown). The other end 152 of the sheet 118 is secured to a tube or rod 154. Alternatively, the tube or rod 154 may be located in a pocket (not shown). At each end, the tube or rod 154 may have a float 156 so that the leading end 152 of the sheet 118 will remain at the surface of the water.

30 To the tube or rod 154 are connected header lines 158. These are operatively connected to a bridle ring 160. The bridle ring 160 is connected to the

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craft by a main line 162.

To each end of the chain 127 there are connected lanyards 164, with the other end of each lanyard 164 being attached to a ring 166. Preferably, 5 the lanyards 164 are a single piece of rope, cord or the like, and are attached to the ring 166 by an adjustable loop knot. The ring 166 is preferably of a diameter greater than the internal diameter of the bridle ring 160. To the ring 166 is also attached a 10 lead line 168 which passes through bridle ring 160 and thence into the craft. Floats 170 are provided on lead line 168 between the ring 166 and the craft, the diameter of the floats 170 being greater than the diameter of the bridle ring 160 and the number of 15 floats required being determined by their characteristics and those of the lead line 168. Thus, by pulling or releasing the lead line 168, the degree of curvature of the free end 126 can be controlled, with the floats 170 and ring 166 providing limits of control 20 so that the degree of curvature can be optimized. The floats 170 also ensure that the lead line 168 floats if dropped from the craft.

The tube or rod 154, with the floats 156, ensures the leading end 152 remains at or near the 25 water surface, the straightness of the leading edge to control the "rectangularity" of the sheet 118, and provides a hand grip for any person in the water and attempting to get onto sheet 118.

If it is desired to change direction, the 30 leading end 152 must be drawn towards the craft by pulling on both main line 162 and lead line 166 until ring 166 can be held. The relative lengths of lanyards 164 can then be adjusted to provide the necessary angle changes, and the lines released. It is most preferred 35 that the main line 162 is securely attached to the

craft.

As can be seen with reference to the preferred embodiments the present invention greatly improves marine safety in several ways. As is obvious 5 the cost of this enhanced safety is very cheap and easy to achieve. The invention can be integrated into the manufacture of life rafts or can be used as an accessory item to any marine craft. It has great application for recreational fishing when in quite 10 strong wind conditions it would enable the craft to drift fish with the bow to the wind and at the required drift speed. The maximum possible comfort and shelter could thus be achieved in conditions which would normally prevent such fishing.

15 It is believed that the invention and many of its attendant advantages will be understood from the foregoing description and it will be apparent that various changes may be made in the form, construction and arrangement of the parts and that changes may be 20 made in the form, construction and arrangement of the marine aid described without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely preferred embodiments thereof.

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1. A marine aid for marine craft, said marine aid including an elongated length of flexible material, a first end of said flexible material adapted to be coupled to said marine craft, and a second end of said flexible material being adapted to releasably receive a weight means.
2. A marine aid as claimed in claim 1, wherein said flexible material is light reflective.
3. A marine aid as claimed in claim 1 or claim 2, wherein said flexible material is radar reflective.
4. A marine aid as claimed in any one of claims 1 to 3, wherein said weight means is located in a pocket extending across said second end of said flexible material.
5. A marine aid as claimed in claim 4, wherein one end of guy ropes are attached to said second end of said flexible material, the other end of said guy ropes being adapted to be operated by an occupant of said marine craft to control said marine aid by controlling position of said second end of said marine aid relative to said marine craft.
6. A marine aid as claimed in any one of claims 1 to 5, wherein said first end is secured to said marine craft by sewing.
7. A marine aid as claimed in any one of claims 1 to 5, wherein said first end is connected to said marine craft by means of a main line attached to said marine craft at one end, the other end of said main line being attached to a bridle ring, said bridle ring being connected to said first end by at least two header lines.
8. A marine aid as claimed in claim 7, wherein said first end has a rod attached thereto and passing across the full width of said flexible material at said first end, said header lines being attached to said

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rod.

9. A marine aid as claimed in claim 8, wherein there is a float mounted on each end of said rod.

10. A marine aid as claimed in claim 7 when appended to claim 5, wherein the other end of said guy ropes is attached to a ring, there being provided a lead line having one end attached to said ring, the other end passing through said bridle ring and into said marine craft.

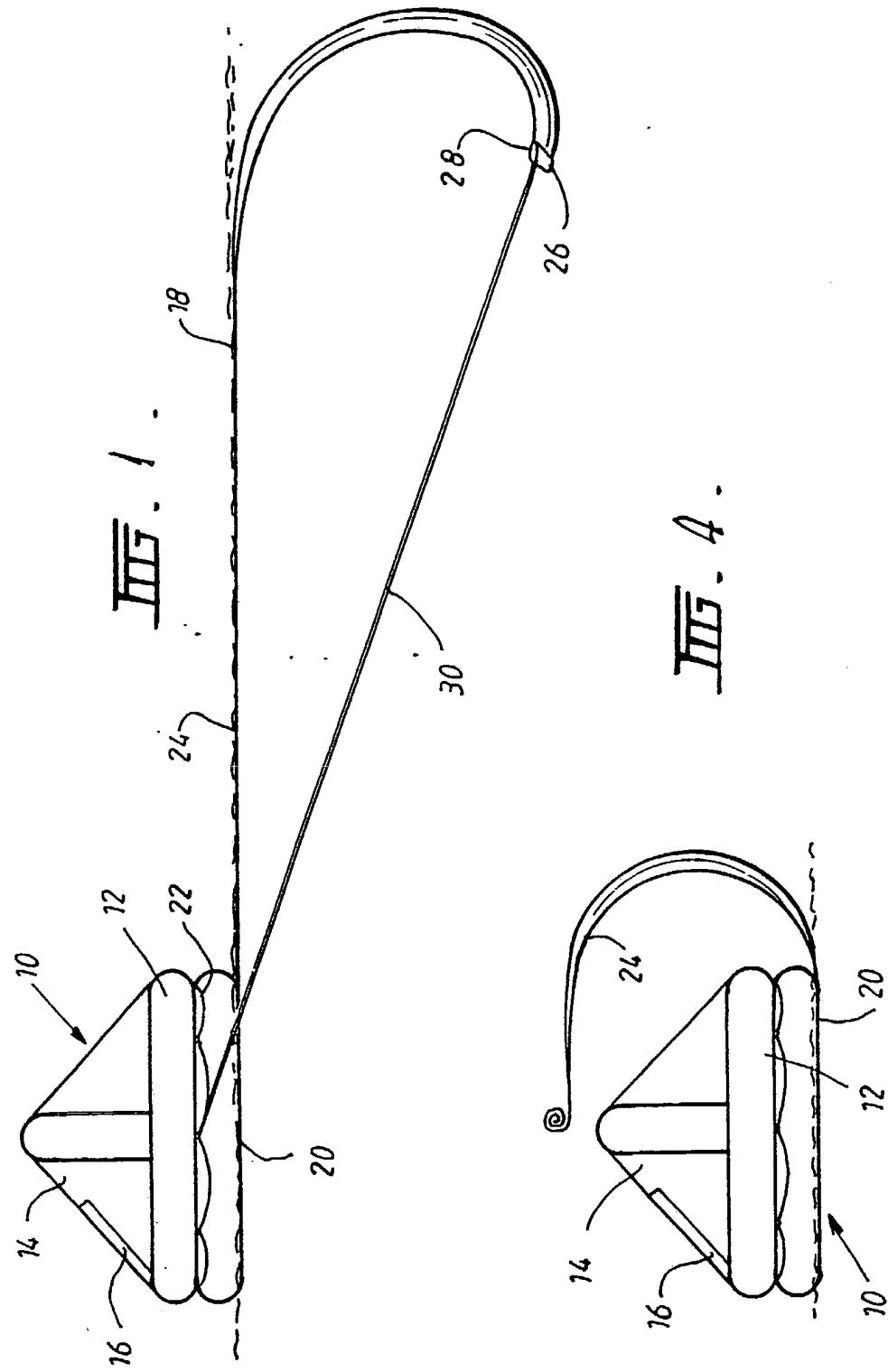
11. A marine aid as claimed in claim 10, wherein said lead line has at least one float attached thereto, said at least one float and said ring being of a size greater than the diameter of said bridle ring.

12. A marine aid as claimed in any one of claims 1 to 11, wherein said weight means is a chain.

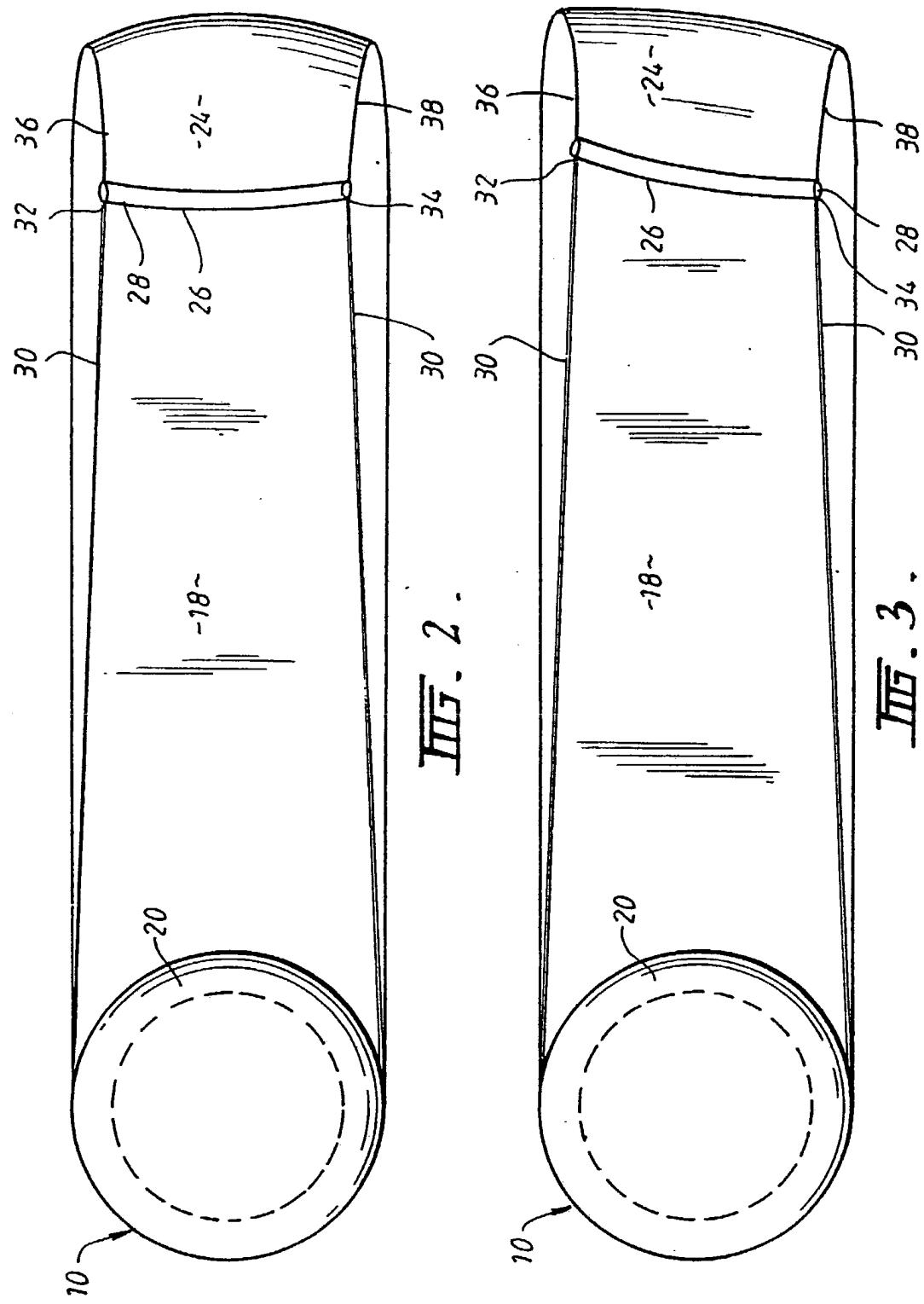
13. A marine aid as claimed in any one of claims 1 to 11, wherein said weight means is a weighted tube.

14. A marine aid substantially as hereinbefore described with reference to the accompanying drawings.

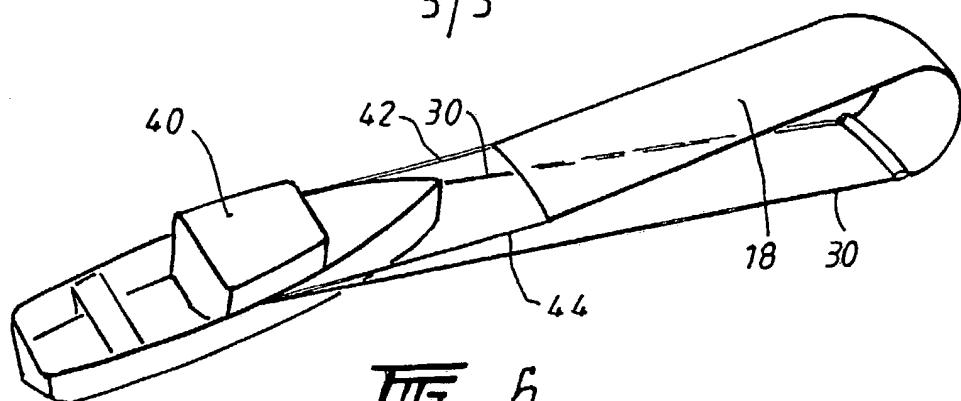
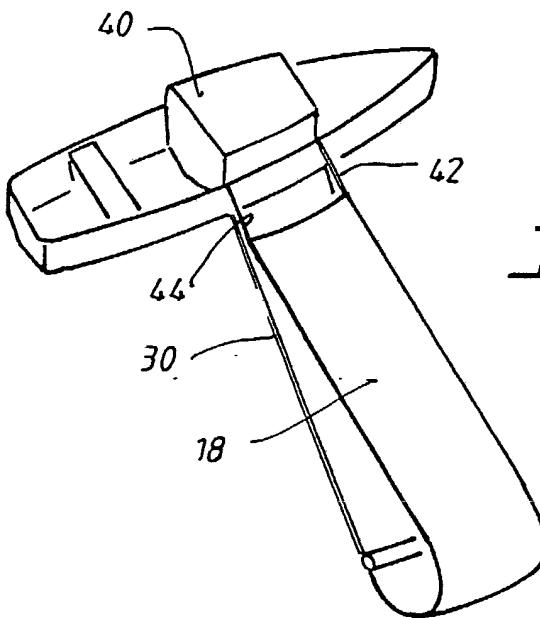
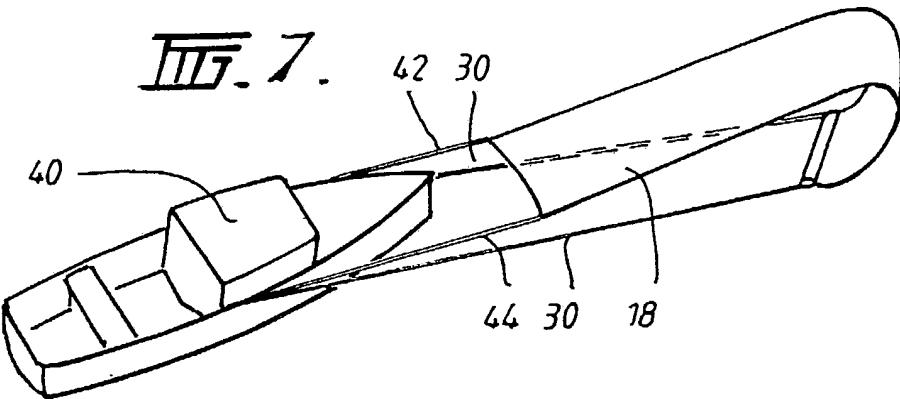
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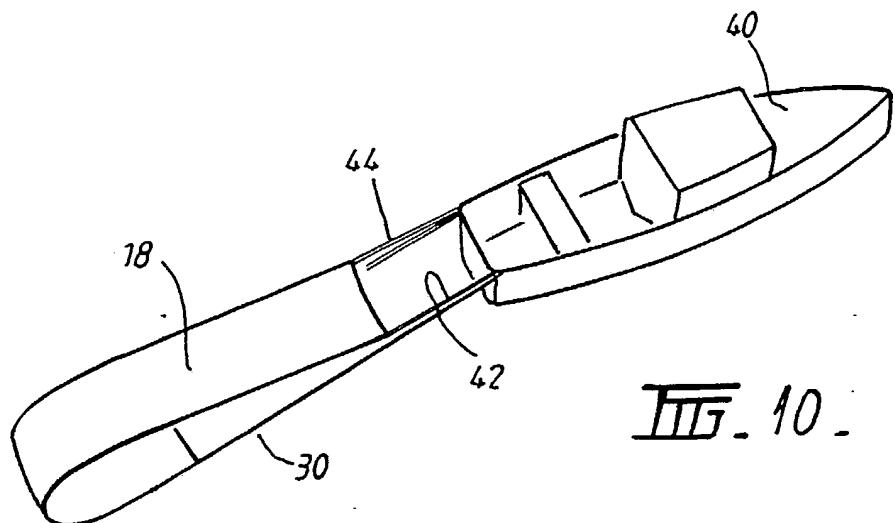
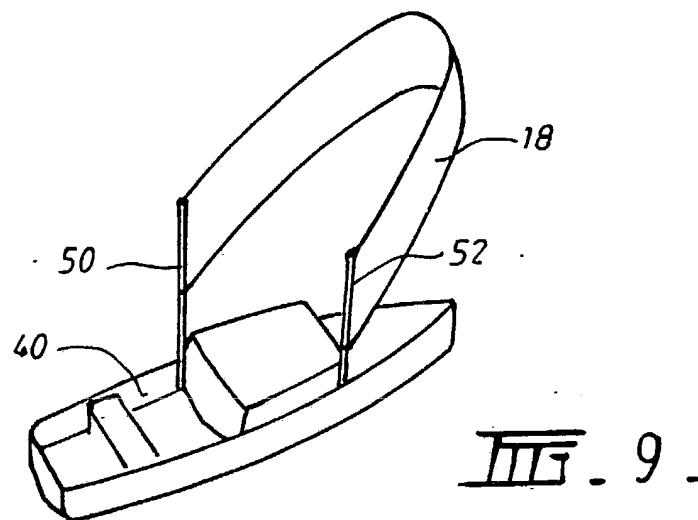
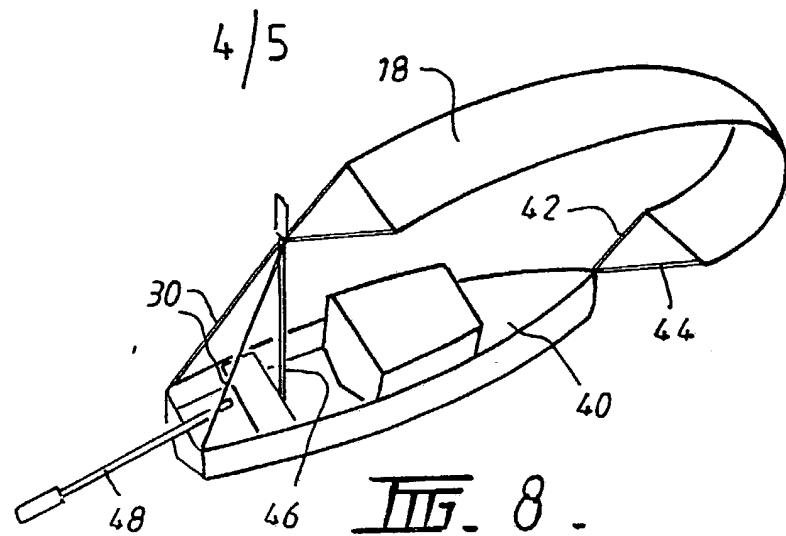


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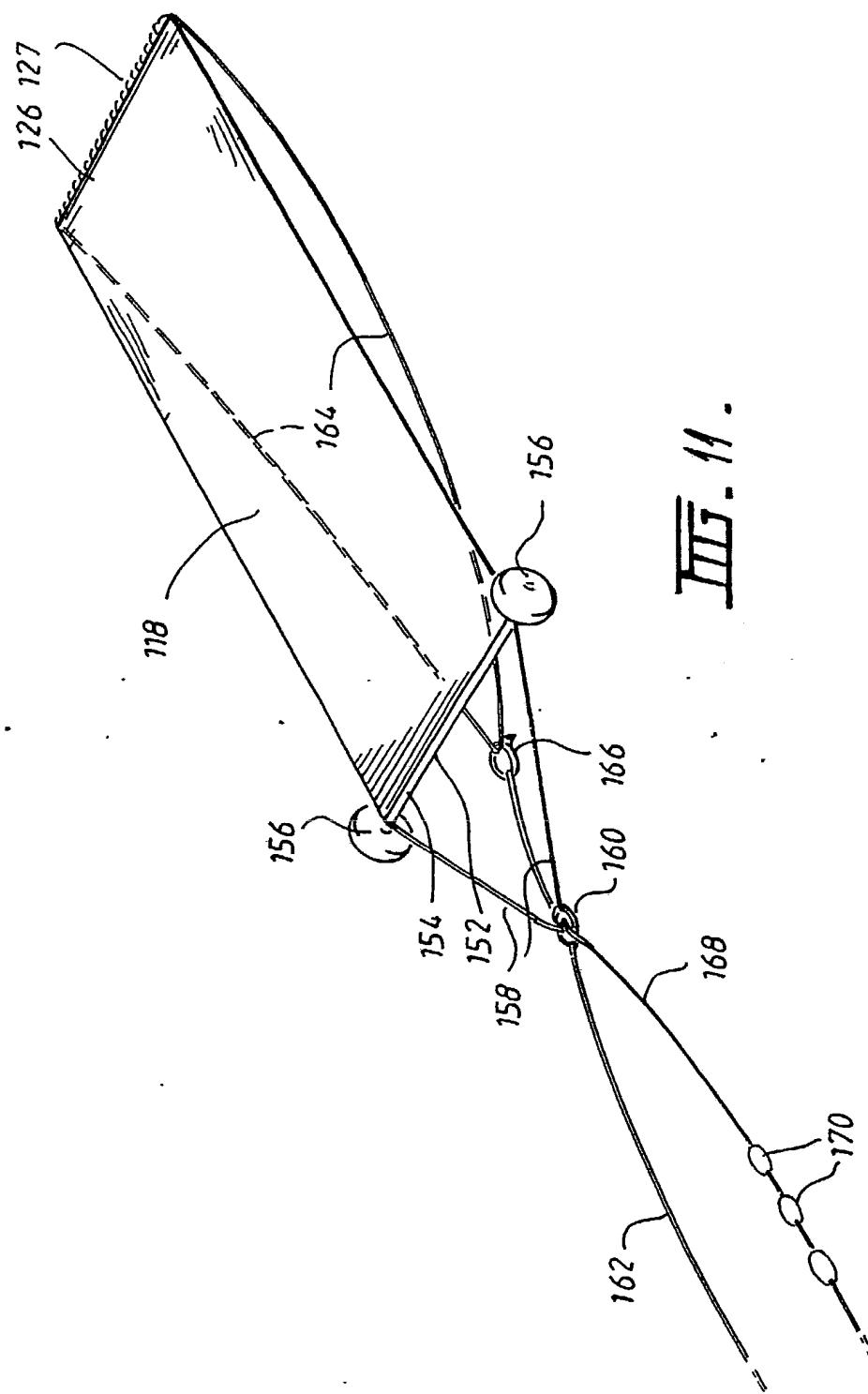


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FIG. 5.FIG. 6.



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INTERNATIONAL SEARCH REPORT

International Application No. PCT/AU 87/00295

I. CLASSIFICATION OF SUBJECT MATTER (1 several classification symbols apply, indicate all)

According to International Patent Classification (IPC) or to other National Classification and IPC

Int. Cl. 4 B63B 21/48, B63H 9/06

II. FIELDS SEARCHED

Minimum Documentation Searched *

Classification System	Classification Symbols
IPC	B63B 21/48, B63H 9/04, 9/06, 25/50

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched *

AU : IPC as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT*

Category **	Citation of Document, *** with indication, where appropriate, of the relevant passages ****	Relevant to Claim No. 15
X Y	AU,B, 58668/73 (468051) (McDONALD) 30 January 1975 (30.01.75) (& US,A, 3952694)	(1)
A	AU,B, 16731/76 (503325) (MENGLER) 30 August 1979 (30.08.79)	
A	AU,B, 32100/77 (507349) (ICEBERG TRANSPORT INTERNATIONAL ITI LIMITED) 14 February 1980 (14.02.80) (& GB,A, 1554814)	
A	US,A, 3417725 (FISHER) 24 December 1969 (24.12.69)	
X	US,A, 3720180 (STRANGELAND) 13 March 1973 (13.03.73)	(1)
Y	DE,A, 2220449 (VERINIGTE SEIDEN WEBEREIEN) 15 November 1973 (15.11.73)	(3)
X Y	GB,A, 628822 (FRIEDER) 6 September 1949 (06.09.49)	(1,4)

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IV. CERTIFICATION

Date of the Actual Completion of the International Search

5 November 1987 (05.11.87)

Date of Mailing of this International Search Report

(19.11.87) 19 NOVEMBER 1987

International Searching Authority

Australian Patent Office

Signature of Authorized Officer

P.J. WHITE

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON
INTERNATIONAL APPLICATION NO. PCT/AU 87/00295

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report	Patent Family Members		
AU 58668/73	JP 49086000	US 3952694	
AU 32100/77	DE 2753046 JP 54057788	FR 2403929	GB 1554814

END OF ANNEX

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